CLAIMS:

1. An optical module for a high-speed bidirectional transceiver having a first optical path and a second optical path for transmitting optical beams in mutually opposite directions comprising:
   a housing;
   an optical signal generating unit located in said housing and generating a first optical beam having a first direction along said first optical path;
   an optical signal receiving unit located in said housing and receiving a second optical beam having a second direction opposite and parallel to said first direction along said second optical path; and an optical fiber connection unit attached to said housing and having an optical fiber for transmitting said first optical beam and said second optical beam.

2. The optical module of Claim 1, wherein said optical signal generating unit is a laser diode having a beam emission direction, and said optical beam receiving unit is a photodiode having a beam receiving direction.

3. The optical module of Claim 1, wherein said optical fiber is arranged substantially perpendicular to said beam emission direction and said beam receiving direction.

4. The optical module of Claim 3, further comprising a first mirror for reflecting said first beam for changing direction thereof from said beam emitting direction to a direction coaxial with said optical fiber and a second mirror for reflecting said second beam for changing direction thereof from said direction coaxial with said optical fiber to said beam receiving direction.

5. The optical module of Claim 4, further comprising: a first optical lens unit located on said first optical path between said optical signal generating

unit and said first mirror; and a second optical lens unit located on said second optical path between said optical signal receiving unit and said second mirror.

6. The optical module of Claim 5, wherein said first optical beam is a collimated beam on a part of said first optical path from said first optical lens unit to said optical fiber connection unit, whereas said second optical beam is a collimated beam on a part of said second optical path from said optical fiber connection unit to said second lens unit.

7. The optical module of Claim 6, wherein said optical signal generating unit is a laser diode having a beam emission direction, and said optical beam receiving unit is a photodiode having a beam receiving direction.

8. The optical module of Claim 7, wherein said housing has a first recess for accommodating said laser diode and a second recess parallel to said first laser diode accommodating said photodiode, positions of said first recess and of said second recess being selected from a first position which is closer to said optical fiber connection unit and a second position which is further from said optical fiber connection unit.

9. The optical module of Claim 8, wherein said laser diode being located in said second position, and said photodiode being located in said first position, said first mirror is a full reflection mirror for reflecting said first optical beam emitted from said laser diode to said first full reflection mirror, while said second mirror is transparent for a beam reflected from said full reflection mirror towards said optical fiber connection unit, but fully reflective for said second optical beam emitted from said optical fiber connection unit towards said photodiode.

10. The optical module of Claim 9, wherein said optical lens unit is a collimating optical objective composed of at least one circular aspherical lens.

11. The optical module of Claim 9, wherein said optical lens unit is a collimating anamorphic objective composed of at least two mutually perpendicular cylindrical lenses.

12. The optical module of Claim 10, further provided with an optical filter located between said second optical lens unit and said photodiode.

13. The optical module of Claim 8, wherein said laser diode being located in said first position, and said photodiode being located in said second position, said first mirror is a full reflective mirror for reflecting said first optical beam emitted from said laser diode to said optical fiber connection unit and is fully transparent for said second optical beam emitted from said optical fiber connection unit to said photodiode, while said second mirror is fully reflective from said second optical beam.

14. The optical module of Claim 13, wherein said second mirror is selective for reflecting only said second optical beam.

15. The optical module of Claim 9, wherein said optical lens unit is a collimating optical objective composed of at one circular aspherical lens.

16. The optical module of Claim 9, wherein said optical lens unit is a collimating anamorphic objective composed of at least two mutually perpendicular cylindrical lenses.

17. The optical module of Claim 1, wherein said optical fiber connection unit is a pre-assembled unit comprising a third collimating lens unit, an optical fiber holding means, a spacer between said third collimating lens unit and said optical fiber holding means, and an optical fiber, said spacer being sandwiched between said third collimating lens unit and said fiber holding means, said fiber having a core and being in butt connection with said spacer, said third collimating lens unit being collimating for said second optical beam and being focusing for said first optical beam for focusing said first optical beam .onto said core.

18. The optical module of Claim 4, wherein said optical fiber connection unit is a pre-assembled unit comprising a third collimating lens unit, an optical fiber holding means, a spacer between said third collimating lens unit and said optical fiber holding means, and an optical fiber, said spacer being sandwiched between said third collimating lens unit and said fiber holding means, said fiber having a core and being in butt connection with said spacer, said third collimating lens unit being collimating for said second optical beam and being focusing for said first optical beam for focusing said first optical beam .onto said core.

19. The optical module of Claim 8, wherein said optical fiber connection unit is a pre-assembled unit comprising a third collimating lens unit, an optical fiber holding means, a spacer between said third collimating lens unit and said optical fiber holding means, and an optical fiber, said spacer being sandwiched between said third collimating lens unit and said fiber holding means, said fiber having a core and being in butt connection with said spacer, said third collimating lens unit being collimating for said second optical beam and being focusing for said first optical beam for focusing said first optical beam .onto said core.

20. The optical module of Claim 13, wherein said optical fiber unit is a pre-assembled unit comprising a third collimating lens unit, an optical fiber holding means, a spacer between said third collimating lens unit and said optical fiber holding means, and an optical fiber, said spacer being sandwiched between said third collimating lens unit and said fiber holding means, said fiber having a core and being in butt connection with said spacer, said third collimating lens unit being collimating for said second optical beam and being focusing for said first optical beam for focusing said first optical beam onto said core.

21. A method for facilitating optical alignment of optical components during assembling of a bidirectional optical transceiver having an optical signal generating unit for generating a first optical beam in a first optical path and a signal receiving unit for receiving a second optical beam in a second optical path:

arranging at least a part of said first optical path and at least a part of said second optical path coaxially on a common axis;

forming a first collimated optical beam by collimating said first optical beam at least on a part of said first optical path and forming a second collimated optical beam by collimating said second optical beam, said first collimated optical beam and said second collimated optical beam being parallel and having mutually opposite directions;

arranging at least a part of said first collimated beam and at least a part of said second collimated beam on a common axis;

arranging at least a part of said optical components on said common axis; and

aligning said optical components by moving said optical beam generating unit and said optical beam receiving unit.

22. The method of Claim 21, wherein said optical signal generating means is a laser diode and said optical signal receiving means is a photodiode.

23. The method of Claim 22, wherein said step of collimating said first optical beam is carried out by placing a collimating optical lens objective on said first optical path, and wherein said step of collimating said second optical beam is carried out by placing a lens unit on said common axis.

24. The method of Claim 23, further comprising the steps of:

transmitting said first optical beam from said laser diode through an optical fiber;

receiving said second optical beam to said photodiode through said optical fiber; and

providing said lens unit with a function of a collimating lens for said second optical beam and with a function of a focusing lens for focusing said first collimated beam onto said optical fiber.